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FUNCTIONAL PROPERTIES OF THE PROTEIN FEED ADDITIVES BASED ON THE WASTES AND BY-PRODUCTS OF SLAUGHTER AND PROCESSING OF POULTRY

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Abstract. The distribution of molecular weights (MW) of the peptides and anti-oxidative capacity (as oxygen radical absorbing capacity, ORAC) were studied in new protein feed additives produced by the short-term thermal hydrolysis and subsequent fermentation by proteolytic enzymes of the wastes and by-products of slaughter and processing of poultry. The properties of the new additives were compared with traditional protein additives, powdered milk (PM) and fishmeal (FM).

It was found that the main peptide fraction in the additives is lightweight peptides with MW below 3 KDa. The highest amounts of this fraction was found in FM (83.58%) and in new "Fermented Additive" (FA, ca. 80%); PM and new "Hydrolyzed Additive" (HA) contained 65.16 and 53.58% of this fraction, respectively. The percentage of heavyweight peptides (> 10 KDa) in FM and FA was ca. 8% and 5%, respectively, while in PM and HA 17.55 and 32.77%.

ORAC of hydrophilic fraction of all additives (to peroxide radical) was within the range of 152-2000 μM of trolox equivalents (TE) per 1 g. The highest ORAC was found in FA (ca. 1980 μM TE/g), the lowest in FM (ca. 153 μM TE/g); ORAC in PM and HA was similar and fell within the range 400-520 μM TE/g.

The conclusion was made that new protein feed additives have certain unique properties including anti-radical and antioxidative activity. MW of the most peptides within FA is below 3 KDa. Introduction of these additives to diets for animals and poultry can improve the quality of the feeds; allow for the saving on the expensive fishmeal; solve the problem of the utilization of poultry slaughter wastes and improve the ecological condition of poultry processing enterprises.

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